

Special Report

Peter Schneider:

Enderlein's microbiological theory

Nutritional Therapy Today 5, 10 - 11, 1995

Professor Günther Enderlein, biologist, zoologist, and former chief curator at the Zoological Museum of Berlin, was born in Leipzig in 1872, into a family of teachers. He studied natural sciences and finished his studies *Summa cum laude*. Enderlein founded his own biological laboratory, where he developed unique preparations from moulds and fungi. He died in Hamburg in 1968 aged 96.

Because Enderlein wrote all his publications (more than 500) in German, his important work has until now been almost completely unknown outside German speaking countries. However, Enderlein's research was recently summarised in English by Dr Maria-M. Bleker (*Blood Examination in Darkfield*, Semmelweis-Verlag, Hoya, Germany, 1993, ISBN 3-925524-01-0). It is to be hoped that the results of Enderlein's research will now get the attention they deserve.

Enderlein's scientific work began when there was a vigorous and passionate debate between the two French scientists Antoine Béchamps and Louis Pasteur. Béchamps claimed that animal and plant cells contain "microzymes" - tiny particles which he said could persist after the death of an organism, could cause fermentation, and from which other micro-organisms could develop. Béchamps said that these microzymes (nowadays we might use the term "prion") are nonperishing and indestructible, and that they are in fact an intermediate stage between living and non-living matter. Under specific conditions, he said, microzymes could develop into bacteria with pathogenic properties. It was his view that many diseases began in this way *within* the body and did not need external sources of infection.

Pleomorphism (a term coined by Enderlein in 1916) means the ability of a micro-organism to exist in different forms and development stages under precisely established conditions. In the following decades Enderlein discovered the importance of these structures to human health, and precisely described and documented their involvement in bacterial cycles in his book *Bakterien-Cyclogenie. Prolegomena zu Untersuchungen über Bau, geschlechtliche und ungeschlechtliche Fortpflanzung und Entwicklung der Bakterien*, published in 1925, as well as in many other treatises. He demonstrated the development of micro-organisms from the minutest virus-like protein particle up to the bacillus stage, and from there to the microscopic fungus.

Enderlein's research could have gained more attention if the famous Pasteur had not interrupted it. He claimed that all micro-organisms, regardless of their type and species, are unchangeable. That each type of bacteria would produce a specific disease. That bacteria and fungi could not be spontaneously generated, and that under healthy conditions blood and tissues are sterile. He insisted that diseases have their origin from exogenous bacteria.

Physiologist Claude Bernard joined in the debate, saying "No gentlemen, the microbe is nothing, the milieu is everything".

Although Pasteur is quoted to have said on his deathbed: "Bernard was right, the microbe is nothing, the milieu is everything", medical thinking had already developed along the lines of his earlier views.

When Enderlein was 23, he delved deeper into Béchamp's work and developed it further. In 1916 in the course of his darkfield microscope studies on typhus, Enderlein detected small, moving, living organisms which conjugated with more highly organised bacteria. After this conjugation the bacteria quickly disappeared. He assumed sexual processes, through which came about not higher developmental forms, but lower forms, which were invisible with a light microscope.

This observation was the beginning of a lengthy treatise on the life cycles of bacteria. Enderlein's most important discovery was that warm-blooded organisms contain "endobionts": living plant-like symbionts (symbiotic micro-organisms). He believed that endobionts were transmitted via the placenta and existed in different developmental stages, beginning with a tiny colloid and ending with a fungus. Bacteria represent the highest development stage within the blood. After death the fungus, which is an even higher stage, occupies the body.

According to this theory, health would require eusymbiosis, in which the species strive for balance among themselves. Disease however would correspond to a disturbed symbiosis.

In 1914, after the start of World War I, Enderlein worked as a volunteer at the General Hospital at Stettin, Germany. He was given the rank of Staff Doctor in the General Biology department. Enderlein took advantage of this unique situation, and also installed a laboratory in his home. Within two years he had finished a complete revision of the developmental processes of bacteria, along with 330 illustrations. As early as 1915 he had isolated the endobiont from the blood, in the form of bacterial stages, and named it *Mucor racemosus Fresen*. Using a pure culture, which he cultured for decades, he illustrated the entire series of developmental stages in the book *Bakterien-Cyclogenie*, a work which absolutely contradicted general opinion on the "sterility" of the blood.

In his books *Folia isopathica*, Vol 1 (1961), and in *Immunobiologica*, Vol 1 (1950) Enderlein stated that in contrast to the manifold occasional illnesses of man, which are caused by specific pathogens like *Micrococcus catarrhalis*, *Bacillus influenzae*, *Pneumococcus*, etc, man has two parasitic microbes, which are steady companions of his species. Both parasites have a specific relationship to each other, complementing and mutually replacing each other. The first parasitic microbe is the tubercle bacillus, which undergoes a series of developmental stages within the human body, and is responsible for the tuberculous diseases. In its primitive stages it is transferred transplacentally into the embryo.

Biologically and functionally distinct from Koch's bacillus, the fungus *Mucor racemosus Fresen*, which infected the entire mammalian species a million years ago, is an even more dangerous parasite. According to Enderlein this endobiont is permanently present in the animal body and cannot be removed. The clinical forms of diseases depend on the state of its development. This fungal parasite exists in all stages of development within the body, and can attack all organs or tissues. It expressly devours protein and can alter the pH of the blood.

This endobiont usually occurs as carcinoma, and Koch's tubercle bacillus as tuberculosis. However, in most other diseases both parasites may occur together, especially in their chondrite stage. ("Chondrite" is a term coined by Enderlein for the most frequently observed primitive stage within the bacterial developmental cycle).

As causes of disease, purely microbiological factors stand in contrast to environmental factors. The role of carcinogenic and dietary factors as contributory environmental causes has steadily increased. The prevailing and most essential factors, however, are fundamental dietetic errors.

The nature of these dietetic errors consists in the fact that the endobiont, the primary parasite in the body, is nurtured into higher and higher developmental stages through the habitual consumption of too much protein from animal and also plant sources, especially through the eating of meat and fish. White flour products also play a part. The higher developmental stages are simultaneously linked with higher pathogenicity. Moreover it is a disquieting paradox that modern medicine often fights diseases with drugs, which simultaneously destroy the body's defensive mechanisms.

According to Enderlein vegetarian raw foods are the foundation for total health, also because the endobiont is a colloid of plant origin. This means that diseases can often be cured by correcting the diet and supplying living colloids in the form of a remedy (for example a product he developed named "Mucokehl", which is a homoeopathic dilution of very low developmental stages of *Mucor racemosus*). These colloids inactivate the highly developed, pathogenic stages of

the endobiont by conjugating with them. Enderlein developed another product ("Utilin", consisting of a homoeopathic *Bacillus subtilis* formula administered by injection) seeking to break down the products of this conjugation so that they could be eliminated from the body via skin, faeces, urine and menstruation.

Candidiasis

Candidiasis is a descriptive term for diseases caused by sporomycetes, predominantly *Candida albicans* in over 90 per cent of cases. This saprophytic micro-organism, which is not pathogenic *per se*, is characterised by demonstrating the most rapid growth rate among all fungi.

Normally *Candida albicans* is present in the host organism as an isolated yeast cell. As a yeast it reproduces by budding or sprouting. Symbiotic colonisation is important for the proper function and defence of the skin and mucous membranes. Permanent colonisation with inactive yeasts is considered to be essential and beneficial. Yeast cells survive in great part intracellularly within the epithelial cells, and even survive phagocytosis by granulocytes. Symptomless vaginal colonisation is common in pregnant women, and infants are infected with *Candida albicans* during the normal birth process.

An acute multiplication of *Candida albicans* in the body does not occur accidentally. When the body's defences become impaired this is in most cases the result of chronic changes of the micro-environmental conditions within the body. This milieu within the body is in great part determined by its pH value. Because fungi can normally only develop in an acidic environment, pH is an important condition for the development and multiplication of these micro-organisms.

The main cause of the insidious acidification of the human organism, demonstrated by an acidic urine pH (consistently below pH 6.5), is faulty diet. A high intake of protein robs the body of alkalinity because of the production of phosphates and sulphates from the protein. In addition chronic faulty fermentation in the bowels can produce large amounts of acids. A high consumption of white sugar overtaxes the metabolism, which then has to use large amounts of enzymes, vitamins and minerals to break down the sugar. So sugar acts as a permanent "robber" of hormones, enzymes and nutrients, weakening the body and impairing its ability to buffer acids.

During the acidification process the pH of the duodenum, which should be as close as possible to 8.3, becomes lower. This acts as a trigger for the release of alkaline pancreatic juices. This release in turn stimulates the cells of the stomach wall to secrete more sodium bicarbonate into the bloodstream, whereupon more hydrochloric acid is excreted into the lumen of the stomach. This acid then reaches the duodenum and a vicious circle begins.

Another important condition for the multiplication of *Candida albicans* is a weakened host organism, caused by diseases like diabetes or AIDS, or by antibiotic drugs (and consequent dysbiosis - disturbance of the balance of microflora within the intestine) hormones, environmental factors, and numerous other factors.

If a compromised epithelial cell dies, and the yeast cell comes into contact with dissolving cell fragments and cell fluid, this can trigger the yeast cell to step up to its next developmental form, the parasitic and mycelia producing fungus. This fungus grows invasively into the tissue and initiates the extension of tissue lesions.

In a weakened host *Candida albicans* is able to colonise nearly all organs, in the course of which superficial colonisation of the mucous membranes is the most frequent. The host produces vast amounts of antibodies against the different developmental stages of *Candida albicans*. Furthermore intact food particles may pass unprocessed through the damaged mucous membrane of the intestines. Allergies to *Candida* antigens (proteins and glycoproteins) and to food components are therefore quite common in candidiasis. The antigen-antibody-complexes can be demonstrated by darkfield microscopy and they seem to be a severe obstacle to the treatment of candidiasis; furthermore it has recently been demonstrated that immune complexes can inhibit antimicrobial responses through Interleukin-10 production (Tripp *et al*, *J Clin Invest* 95:1628-1634, 1995).

Enderlein's Treatment for Candidiasis

In the presence of an acute and life threatening infestation, treatment with anti-fungal drugs such as nystatin is necessary. The treatment of chronic candidiasis, however, includes several different aspects. The two most important aspects are the correction of *Candida's* milieu or environment, and the introduction of homoeopathic concentrations of *Candida* micro-organisms in their lowest stages of development, which can inactivate the more highly developed fungi by conjugating with them (this product is available as "Albicansan").

The correction of the internal environment is often very difficult, because the patient's dietary habits have to be changed. It is also a lengthy process. The treatment diet particularly requires sufficient amounts of fibre (which physically removes colonies of *Candida* in the intestine) large amounts of alkaline-forming foods (vegetables), and little animal protein.

The balance of microflora on the infected mucous membranes can be improved with the consumption of yoghurt, freshly made from UHT milk. Besides supplying helpful lactobacilli, yoghurt corrects the pH and has an immunostimulatory effect due to the peptides produced by *Lactobacillus*

bulgaricus from milk casein. The administration of homoeopathic *Escherichia coli* strain NISSLE 1917 (in the form of the "Mutaflor" remedy from Ardeypharm) also helps to normalise the flora.

Any persisting immune complexes have to be dissolved by proteolysis. Enderlein designed the product "Utilin" (homoeopathic *Bacillus subtilis*) for this purpose.

Although sugar and white flour should be avoided, excessive restriction of carbohydrates does not seem to be necessary for the treatment of candidiasis.

Based on the results of his research, Enderlein also developed very effective therapies, which he called "isopathic", for a broad range of diseases from tuberculosis to cancer, in humans and animals. The remedies were produced in Enderlein's own plant first in Berlin and later on in Hoya, Germany.

Albicansan, Mucokehl, and Utilin are tradenames of the Sanum-Kehlbeck Company in Hoya, Germany, which was founded by Enderlein. The UK distributors of these products are Noma (Complex Homoeopathy) Ltd, Tel 01703 770513. Available to practitioners only.

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